

REMARKS

Claims 1-8 remain pending in this patent application.

This Amendment is being filed as a submission under 37 CFR § 1.114(c) along with a Request for Continued Examination.

In this Amendment, claims 1-6 are being amended. Support for the amendments to claims 1 and 2 can be found on page 5, lines 24-25, of the specification in this application as filed. Support for the amendments to claims 3 and 4 can be found on page 7, lines 10-11. Support for the amendments to claims 5 and 6 can be found on page 8, lines 6-7.

PRIOR ART REJECTION

Claims 1-8 were rejected under 35 USC 103(a) as being unpatentable over US 4503092 (Klebe et al.) in view of US 2002/0155256 A1 (Ohta et al.). Applicant traverses this rejection insofar as it might be deemed applicable to any of claims 1-8 as now presented.

Without acquiescing in the rejection, Applicant has amended claims 1 and 2 to clearly specify that the hydrophobizing section is divided from the deacidifying section. Claims 3-6 have been amended to recite the temperatures at which hydrophobization and deacidification occur as *properties* of the hydrophobizing section or device and the deacidifying section or device, respectively.

The invention disclosed and claimed in this application employs a fluidization vessel that is divided into a hydrophobizing section or device for hydrophobization and a deacidifying section or device for deacidification. Silica hydrophobization is carried out in the hydrophobizing section or device, and halogen gas, such as chlorine, which accompanies the silica from the hydrophobizing section or device is removed in the deacidifying section or device. In the hydrophobizing section or device, the silica is fluidized with an inert gas, generally nitrogen (N₂), and is treated with a hydrophobizing agent. In the deacidifying section or device, the silica is fluidized with an inert gas, typically nitrogen, and subjected to deacidification. Water is typically added to the fluidizing gas so that deacidification can be carried out in a water-containing atmosphere.

In the fluidization vessel, as disclosed and claimed, silica hydrophobization and deacidification are conducted separately, which attains and ensures an advantageously high efficiency and reliability of the hydrophobizing treatment and deacidification treatment. The hydrophobic silica fine powder which passes out of the fluidization vessel, including both hydrophobizing section or device and deacidifying section or device, is collected by a second cyclone and a second filter, and the collected hydrophobic silica is returned to the deacidifying section or device.

In the process and apparatus disclosed by Klebe et al., silica hydrophobization and deacidification treatments are conducted in the fluidized bed reactor 11, which does not include divided hydrophobizing and deacidifying sections. As a consequence, the efficiency and reliability of the silica hydrophobizing and deacidifying treatments is inferior compared to the treatments that are carried out in Applicant's disclosed and claimed apparatus. Also, in the Klebe et al. process and apparatus, the reaction waste gases leaving the fluid bed reactor 11, consisting of hydrophobized silica, dimethyldichlorosilane, hydrogen chloride, nitrogen and steam, flow through line 13, where they mingle with the silica discharged from cyclones 4, 5 and 6, and are introduced into cyclone 8. The solid silica discharged from cyclone 8 is mixed with silane and N₂ and supplied to the fluidized bed reactor 11.

Since there are no divided hydrophobizing and deacidifying sections in the Klebe et al. apparatus, there is no structure in the Klebe et al. apparatus that can be fairly characterized as "a second cyclone and a second filter for collecting hydrophobic silica fine powder which flies out of the fluidization vessel including both the hydrophobizing section or the device for hydrophobizing and the deacidifying section or the device for removing halogen gas, and for returning the collected hydrophobic silica to the deacidifying section or the device for removing halogen gas," as required by claims 1 and 2.

Claims 1 and 2 also specify that the second cyclone and filter can be held at a temperature of 100-500° C. The Examiner apparently regards this claimed feature as being met by Klebe et al. and states, "The suction line (13) will reduce the pressure and thereby cool the stream prior to its separation." The Examiner cites Ohta et al. as evidence that cooling from the reduced pressure "will result in a temperature of 100-160° C." The Examiner also relies on Ohta

et al. for a disclosure "that pyrogenically prepared silica can be separated from waste gases by filter or cyclone" and contends that the disclosure in Ohta et al. would have made obvious a modification of the Klebe et al. apparatus in which filters are provided along with the cyclones.

The statement in paragraph 0042 of Ohta et al. cited by the Examiner reads, "The reaction gases and the resulting pyrogenically prepared silica, doped with alumina, were removed under suction via a cooling system 31 by applying a reduced pressure and thus cooled to about 100 to 160° C." Applicant does not accept the Examiner's assertion that this statement by Ohta et al. teaches cooling *by pressure reduction* of the reaction gases and pyrogenically prepared silica to a temperature of 100 to 160° C. Rather, Applicant reads the Ohta et al. statement as teaching that *the temperature reduction is brought about by the cooling system 31*, and that suction resulting from the applied pressure reduction effects removal of the reaction gases and pyrogenically prepared silica. (If the cooling were effected by the pressure reduction alone, it seems unlikely that cooling system 31 would be separately identified.) Applicant therefore submits that the Ohta et al. disclosure cannot support the Examiner's conclusion that the suction line 13 in Klebe et al. will bring about the temperature range required by Applicant's claims.

Applicant views the disclosure in Ohta et al., directed to ink jet recording materials, as having little relevance to the Klebe et al. process for hydrophobization of pyrogenically produced silica. For this reason alone, Applicant submits that the disclosure in Ohta et al. cannot properly serve as a basis for making modifications to the apparatus disclosed by Klebe et al. Moreover, the basis for the Examiner's proposed modification of the Klebe et al. apparatus apparently resides in the statement in paragraph 0042 of Ohta et al., which reads, "The solid was separated from the gas stream in a filter or cyclone." Applicant does not see how this statement can be viewed as teaching the *addition* of a filter to a cyclone, as would be needed to meet the requirements of Applicant's claims.

In the discussion above, Applicant has shown that independent claims clearly recite patentable departures from the prior art applied by the Examiner. The patentability of claims 1 and 2 obviously inheres in dependent claims 3-8. The dependent claims are also patentable because of limitations they recite that are not disclosed or made obvious by the applied prior art.

The Examiner has not cited any disclosure in either Klebe et al. or Ohta et al. that bears on the limitations recited in claims 3-8.

As now presented, claims 3 and 4 specify, *as a property of the apparatus*, that the hydrophobizing section or device is capable of conducting hydrophobizing of the collected silica fine powder at a temperature of 400 to 600°C and a flow velocity of 1 to 6 cm/s. Claims 5 and 6 now specify, *as a property of the apparatus*, that the deacidifying section or device is capable of conducting deacidification at a temperature of 400 to 500°C and a flow velocity of 1 to 6 cm/s. As disclosed in Klebe et al., the hydrophobization reaction in fluidized bed reactor 11 occurs in a temperature range of 400-600° C. Klebe et al. offers no disclosure of a flow velocity in the fluidized bed reactor. As a consequence, Klebe et al. cannot be fairly viewed as disclosing an apparatus having a hydrophobizing section or device that is capable of conducting hydrophobizing of silica fine powder at a temperature of 400 to 600°C in combination with a flow velocity of 1 to 6 cm/s. As noted above, there are no divided hydrophobizing and deacidifying sections in the Klebe et al. apparatus. Since there is no structure in the Klebe et al. apparatus that could be fairly characterized as a deacidifying section, obviously there is no clearly disclosed structure that can meet Applicant's claimed requirement for a deacidifying section or device that is capable of conducting deacidification at a temperature of 400 to 500°C and a flow velocity of 1 to 6 cm/s. Ohta et al. offers no disclosure that is relevant to the limitations recited in 3-6.

Claims 7 and 8 specify *a property of the apparatus*, i.e., that the second cyclone and second filter can each be held at a temperature of 130 to 200°C. As observed above, the combination of the disclosures in Klebe et al. and Ohta et al., whereby the Klebe et al. apparatus would incorporate filters along with the cyclones, would not have been obvious to one of ordinary skill in the art. Neither of the Klebe et al. and Ohta et al. patents offer disclosure that even remotely suggests the temperatures of the second cyclone and second filter that are specified in claims 7 and 8.

In view of the foregoing observations, Applicant respectfully submits that no reasonable combination of the disclosures in Klebe et al. and Ohta et al. can properly serve as a basis for rejecting any of any of claims 1-8, as now presented, under 35 USC 103(a).

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CONCLUSION

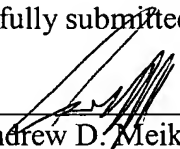
In view of the amendments and observations presented herein, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection stated in the outstanding Office Action and recognize all of the pending claims as allowable.

If unresolved matters remain in this application, the Examiner is invited to contact Frederick R. Handren, Reg. No. 32,874, at the telephone number provided below, so that these matters can be resolved expeditiously.

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Respectfully submitted,

By


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